

Memorial Avenue Bridge
Spanning Lycoming Creek
Williamsport
Lycoming County
Pennsylvania

HAER No. PA-102

HAER
PA,
41-WILPO,
3-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
MID-ATLANTIC REGION, NATIONAL PARK SERVICE
DEPARTMENT OF THE INTERIOR
PHILADELPHIA, PENNSYLVANIA 19106

HISTORIC AMERICAN ENGINEERING RECORD

MEMORIAL AVENUE BRIDGE

HAER No. PA-102

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PA,
41-WILPO,
3-

Location: City of Williamsport, spanning Lycoming Creek, Lycoming County, Pennsylvania

UTM Coordinates: Easting 328380 Northing 4567650

7.5' Quad: Williamsport

Dates of Construction: Built in 1889 by the Groton Bridge and Manufacturing Company of Groton, New York. In 1925 a center pier was added and the center truss panel was modified. An open steel deck was installed in 1939.

Present Owner: Pennsylvania Department of Transportation

Use: Vehicular and pedestrian bridge

Description: The existing two-span structure is a modified, pin-connected, continuous through truss approximately 266 feet long. The superstructure, which is wrought iron with steel modifications, consists of 16 panels. Roadway width is 17'3" curb to curb. A sidewalk on the north side is 4'2" wide. The truss is considered to be a modified Pennsylvania (Petit) truss.

Significance: The Memorial Avenue Bridge is significant for its architectural and engineering features. Important original items that contribute to the bridge's integrity are the plaque, the latticed sidewalk grilling, and the Camelback form of truss. The plaque is representative of the highly decorative wrought iron work of the 19th century. The sidewalk grilling, however, is fairly standardized. The bridge itself, moreover, is the oldest surviving pinned through-truss of comparable types in Lycoming County. In addition, although the Camelback form is well represented in the modern American landscape, Groton bridges of this configuration may be rare. Along with the significance of its builder, age, and configuration, the Memorial Avenue Bridge is a particularly lengthy metal truss, 266 feet long. It remains at its original location.

Project Information: The Memorial Avenue Bridge was documented by Yule, Jordan Associates (Camp Hill, Pennsylvania) for the Pennsylvania Department of Transportation in 1986. The project team consisted of Nathan D. Wilson, Bridge Engineer; Christine Corbe', Historian, and Laurence Mohar, Photographer. The documentation was undertaken to fulfill the Memorandum of Agreement, which requires recordation as a mitigation measure before demolition of the structure.

I. HISTORICAL INFORMATION

A. Physical History

The Memorial Avenue Bridge over Lycoming Creek was built in 1889 by the Groton Bridge and Manufacturing Company of Groton, New York for the Lycoming County Commissioners. The structure was built approximately 4,000 feet north of the creek's confluence with the West Branch of the Susquehanna River. After the flood of June 1, 1889 washed away an earlier bridge, the current bridge was constructed. Photograph 31 shows the bridge in 1908, less than 20 years after construction.

Officially recorded modifications to the Groton bridge date back to 1919, when a wood block floor was installed (see drawing in Photograph 35). Three years later the east abutment was jacketed (FHWA 1984 Preliminary Case Report).

In 1925 a major modification was made to the bridge: The concrete pier was added and the center truss was revised to accept heavier loads. The center truss revisions consisted of a new vertical member, diagonal tension rods, and a bearing assembly. (See 1925 drawing in Photograph 36). These changes varied loads on the trusses and altered the configuration of the span. Such drastic measures may have been the outgrowth of generally improved transportation facilities in Williamsport and the need to increase load-carrying capacity for motor vehicles (FHWA 1984 Preliminary Case Report).

Photograph 32 shows the wood block floor being repaired in 1932. Photograph 33 offers a historic view of the bridge in 1934. At that time the structure, at least at this eastern end, had two end ornaments on either side of the plaque. Other notable features are the timber deck and sidewalk grilling. The structure was posted with a 10,000-lb. weight restriction and a 10-mph speed limit (FHWA 1984 Preliminary Case Report).

In 1939 the open steel deck was installed (see Photograph 34). The west abutment was jacketed in 1946, and in 1956 (assumed) roller nest truss bearings were installed at the pier and east abutment. Costs of improvements up to this date are not known (FHWA 1984 Preliminary Case Report).

The Commonwealth of Pennsylvania took ownership of the bridge through Legislative Act 615 on September 18, 1961. In the "Preliminary Bridge Record" dated March 30, 1962, the Pennsylvania Department of Highways remarked that the "original one span through truss superstructure [was] converted to two span action by placement of concrete bent under center of span and introduction of new pins in superstructure in conjunction with other modifications of truss" The Commonwealth designated the structure as Legislative Route 20, Spur A. The approaches continued to be owned and maintained by the City of Williamsport (Pennsylvania Department of Transportation January 1983).

Repairs carried out since the state take-over are listed below
(Pennsylvania Department of Transportation January 1983):

<u>Year</u>	<u>Improvement</u>	<u>Cost</u>
1964	Structure painted	\$ 4,600.00
1971	Members flame shortened (to tighten)	7,503.72
1972	Members flame shortened	2,678.02
1973	Diagonals strengthened	1,483.61
1976	Structure painted	21,000.00
1976 or 1977	Floor beams repaired and horizontal truss support added	Unknown
1979	Vehicle collision damage repaired	2,500.00

B. Historical Context

1. History of the Crossing

Although the literature does not reveal the exact site, the first bridge over Lycoming Creek was built circa 1812-13 by Izaac Lyon. The Lycoming Creek structure and another bridge over Loyalsock Creek were "the first timber arched structures in the county" and stood until the flood of March 17, 1865 (Williamsport Sesquicentennial Corporation 1956).

Between 1828 and 1849 the Great Road consisted of a portion of W. Fourth Street, then extended northwest over Lycoming Creek. The only other creek crossings in the Williamsport area shown at that time are the Williamsport and Elmira Railroad Bridge to the north and the West Branch Pennsylvania Canal to the south (Plankenhorn 1957). The canal was completed through the city in 1833, the railroad in 1854 (Williamsport Sesquicentennial Corporation 1956).

In the early days of the area's settlement the Memorial Avenue site may have offered the easiest and least expensive crossing because of the creek's narrowness at that location. To the south, the creek was divided at points and the surrounding land was swampy (Plankenhorn 1957).

Cross-references in the Lycoming County Road Dockets and 1900 City Ordinances indicate that the Memorial Avenue structure was referred to as "the upper bridge." "The upper bridge across Lycoming Creek was constructed in the early part of the century at a point some distance north of its present location....There seems to be no record of its construction in the Road Docket" (Richards and Crocker 1900). In the April 1855 Sessions a petition was presented to the court for a change of site to its present location. "Viewers were appointed, and they filed their report, which was approved by the court and the county commissioners, August 22, 1855, directing the bridge to be built by the county...." (Road Docket 1855; Richards and Crocker 1900).

The county built two "lower bridges" across Lycoming Creek in 1867, both of them covered wooden bridges. Their locations are shown in the county road docket as crossing two channels of Lycoming Creek south of Memorial Avenue (Road Docket 1867). In the same year Newberry was annexed to Williamsport, which had been incorporated as a city in 1866.

Maps of 1872 (Walling and Gray) and 1873 (Pomeroy) indicate that the Memorial Avenue crossing remained at its present location, although the adjoining streets were named Erie Avenue to the east and Bridge Street to the west. The maps also show structures over the two southern creek channels mentioned above, as well as railroad bridges north and south of the Memorial Avenue crossing.

Williamsport's dependence on its bridges grew as development and population increased during the 1880's, which had seen a tremendous population spurt compared with the previous decade. Between 1880 and 1890, population jumped 43%, in contrast to only 18% between 1870 and 1880. Thus by 1890 the city supported 27,132 people (Plankenhorn 1957).

Williamsport's growth as a city had begun with the construction of the log boom on the Susquehanna River in 1862 (Meginness 1895). The lumber industry provided jobs and drew other businesses into the city (Larson 1984). By 1886 Williamsport boasted five railroads, which linked the city to all major eastern markets. Two rail stations had been built, and 16 passenger trains stopped daily (Larson 1984).

Williamsport had also become the center of the retail industry in the north-central portion of the state. In the mid-1880's the city had 6 hotels, 95 groceries, 13 boot and shoe makers, and 25 dry goods/millinery stores. Telephones and electric lights had been installed early in the decade (Larson 1984). By 1889 Williamsport had gas, water, 7 financial institutions, paid fire companies, and 10 daily or weekly newspapers (Williamsport City Directory 1889).

In the midst of boom came disaster. On June 1, 1889 the worst flood in Williamsport's history inundated the city. The flood waters crested at 33'1", 5' higher than the 1865 flood (Larson 1984). All the county bridges over the principal streams and river were washed out at a loss estimated at the time at \$500,000 (Meginness 1892). The log boom broke, and approximately 200 million feet of lumber were lost (Larson 1984). The present truss bridge was built later that year to replace the structure shown on earlier maps. Built for the county, the bridge displayed on the plaque the names of the three commissioners in office at that time: A.P. Foresman, Wm. S. Stare, and F.J. Strebeigh. No record of its construction appears in the Road Dockets.

The new bridge was built of wrought iron (Gannett Fleming Corddry and Carpenter 1969) on a 90-degree skew. Constructed as a 266-foot-long single span, its light truss members were adequate for the horse and buggy traffic of the day (Pennsylvania Department of Transportation January 1983). At that time it was referred to as the Newberry or Erie Avenue Bridge. After 1925 Erie Avenue was renamed Memorial Avenue (Williamsport City Directory 1925, 1926; Krause 1925).

In the decade after the flood Williamsport's population growth, which had risen so rapidly during the '80's, slowed to a crawl. Between 1890 and 1900 the number of people in the city increased only 6% (Plankenhorn 1957). Property values decreased due to the extensive rebuilding that was necessary (Larson 1984).

Nevertheless, the flood damage was repaired relatively quickly. A new hospital, court house, and post office were built. In 1892 the Lycoming Opera House opened (Larson 1984). A contemporary historian records that by 1895 the city boasted 40 churches, a high school, a seminary, electric railways, gas, water, paved streets, steam heat, a city hall, 8 financial institutions, 4 daily newspapers, and 5 railroads (Meginness 1895).

Early in the 20th century, modernization, enlargement of the city, and manufacturing diversification stimulated Williamsport's growth. The city's Board of Trade, organized in 1885 to bring in new industry, helped to attract a number of new businesses. Between 1899 and 1909, the number of manufacturing firms jumped from 142 to 159. Immigrants also helped to swell the population in the early 1900's. Metal products, leather, rubber, and textiles expanded employment opportunities and relieved the city of its dependence on the lumber industry (Larson 1984).

By 1906 Lycoming Creek had a Fourth Street Bridge, but a "Third Street Extension" to the western part of the city constructed in that year was considered a "badly needed direct route, opening up territory hitherto inaccessible," according to Williamsport's Daily Gazette & Bulletin of March 7, 1906. The paper reported that "at present the only route that can be depended on is by way of Erie Avenue, for while the Fourth Street Bridge is in use it is likely to be closed to traffic at any time" (Daily Gazette and Bulletin March 7, 1906). A historic view of the bridge in 1908 appears in Photograph 31.

After World War I came the era of the motor car, and Williamsport kept pace with the needs of the new mode of transportation by improving access to eastern markets. In 1921 the city for the first time boasted a paved highway to eastern commerce via Montoursville, Muncy, Sunbury, Harrisburg, Lancaster, and Philadelphia (Plankenhorn 1957). During the remainder of the decade, paved roads were extended to the north and west (Plankenhorn 1957). By 1929 the city's population had grown to 44,507, a 20% increase in 9 years (Larson 1984).

Most likely in response to heavier loads, increasing traffic volumes, and decreasing use of the railroad, a center pier was added to the Memorial Avenue Bridge in 1925. The new pier also necessitated modifications to the center truss members.

2. The Groton Bridge and Manufacturing Company (Builder)

The builders of the Memorial Avenue Bridge, the Groton Bridge and Manufacturing Company of Groton, New York, had been in business since 1877, when the Groton Iron Works and the Groton Separator Works merged. At that time the firm was known as the Groton Iron Bridge Company (Thurber Fall 1983).

It "became the first large-scale industrial employer in the community" and grew into a major manufacturing company. In the last decade of the 19th century, it ranked in the top quarter of the 119 bridge companies listed by the American Iron & Steel Association. The firm built bridges in at least 27 states and Washington, D.C. and employed more than 150 men at the height of its operation (Thurber Fall 1983).

In Groton, the bridge plant grew to 17 buildings on the east and west sides of Main Street at Elm. The company also stationed agents in branch offices in Sunbury and Corry, Pennsylvania; Ohio; Tennessee; Texas; California; Michigan; Virginia; New York City; West Virginia; and Massachusetts (Thurber Fall 1983).

The company had three periods of operation:

- a. From 1877 to 1887 the Groton Iron Bridge Company built 350 small, simple, Pratt trusses in New York (Thurber Fall 1983).
- b. From 1887 to 1899 the firm, now the Groton Bridge and Manufacturing Company, expanded and went into its most productive period (360 bridges were built in 1896 alone). During that period the firm was "managed by the Conger family and staffed by E. A. Landon, a Cornell engineering graduate, following a reincorporation in 1887 financed by 1,000 local subscriptions of \$100 each" (Thurber Fall 1983).
- c. The company's last period occurred between 1902 and the 1920's, when the firm went out of business. The company reorganized after its takeover in 1899 by the American Bridge Company. In 1906 the firm contracted with the State of New York to build 15 bridges over the barge canals (Thurber Fall 1983).

Today, approximately 101 bridges remain in the U.S. (Thurber January 5, 1984), at least 81 in New York State (Thurber Fall 1983). It is estimated that 20 Groton-built bridges survive in Pennsylvania because of the "proximity of the state, the existence of company field offices there and the record of bids and awards" in Engineering News between 1877 and 1910. During those years 32 bids and 13 awards totaling \$199,361 were recorded for Pennsylvania (Thurber 1985).

3. Relationship of the Bridge to Local Surroundings and Transportation Needs

That a bridge had been established at the Memorial Avenue site since at least 1855 illustrates the importance of the crossing. Geographically, it was located at a relatively narrow point in the creek, and land to the south was swampy (Plankenhorn 1957). In addition, the site connected to through roads. When the flood of June 1889 destroyed the structure standing at that time, the new iron bridge was built at least by the end of the year, according to the date on the plaque. Industrial plants had sprung up in the vicinity as early as 1873, when Penn Rubber Company is shown at present-day Erie and Oliver Streets. Demorest Sewing Machine Works (now the AVCO Industries site) is shown as a large industry at that location on a 1891 - 94 map (Sanborn-Perris). The Demorest factory district was considered to be the area bounded by Lycoming Creek and the two railroads in this vicinity (Plankenhorn 1957).

During the early 1900's Williamsport diversified its industrial base and became a major eastern market. By 1925 increased use of the motor car, an improved network of paved roads, and commercial expansion most likely prompted the installation of a center pier to support the Memorial Avenue Bridge under heavier vehicle loads. The action underscored the structure's importance as a connection between central Williamsport and outlying areas west of Lycoming Creek.

The bridge has survived major floods in 1895, 1936, 1972, and 1975. Today it is one of four creek crossings that tie Williamsport's main commercial and residential districts with Newberry, the city's industrial and residential satellite area west of the creek. As such, the bridge is important to community cohesion and accessibility. The present bridge also provides the most convenient and safest route for pedestrians and bicyclists to Memorial Park for residents in Newberry and the neighboring area to the north, Garden View.

4. Other Sources of Additional Information

Engineering drawings of repairs made in recent years are retained on microfilm in the files of the District 3-0 Bridge Unit, Montoursville, PA. In-depth bridge inspection reports, annual inspection reports, and associated photographs and drawings are also on file in the District 3-0 offices.

5. Representation in Existing Surveys

The existing Memorial Avenue Bridge has been determined eligible for the National Register of Historic Places and is listed in the Pennsylvania Historic Resource Survey. The National Register Nomination Form and Pennsylvania Historic Resource Survey Form are included in the Preliminary Case Report for the project (Federal Highway Administration 1984). The bridge is not represented in either the Survey of Historic Sites and Landmarks of Lycoming County (Lycoming County Planning Commission 1971) or the Lycoming County Historical Preservation Plan (Lycoming County Planning Commission 1974).

II. ENGINEERING INFORMATION

A. Description of Existing and Original Structure

Photographs 1 through 30 identify representative features of the substructure and superstructure. Photographs 1 and 2 show views of the bridge as it stands today. Photographs 31 through 34 show historic views of the bridge. In Photographs 35 through 42 drawings of the structure in plan and cross-section are included. The numbering system used to identify the truss members is shown in Photographs 37 and 39.

The original bridge, as constructed in 1889, was a pin-connected, single span, Pennsylvania truss 266 feet center to center of the abutment pins, (Photograph 31). Panel lengths were 16' - 7-1/2", 7 at 33' - 3" and 16' - 7-1/2". The trusses were 19' - 4" center to center (Photographs 3 and 4). Because of its great length and required height the longer panels were subdivided to provide a proper relation between the slope of the diagonal web members and panel length for maximum economy in material. Panel points 0, 1, 3, 5, 7, 9, 11, 13, 15, and 16 were pinned (Photograph 18).

The end posts and upper chords consist of built-up sections of plates and angles (Photographs 6, 7, and 12). Lower chords (Photographs 17 and 18) and end verticals (Photograph 25) were paired eyebars. The other full height verticals were double laced channels (Photograph 28). Sub verticals were hairpin bars and a loop rod (Photograph 14). Diagonals proceeding from lower joints to next higher numbered intermediate joints consisted of doubly laced channels (Photographs 13 and 14). Diagonals proceeding from intermediate joints to next higher numbered upper joints were hairpin bars and loop rod in one panel and hairpin bars in the next; diagonals in the opposite direction consisted of paired eyebars (Photographs 12 and 14).

The floor system consisted of a wooden deck supported on channel stringers (Photograph 35). Floorbeams located at each panel point and subpanel point supported the stringers. Floorbeams were hung from the lower chord pins using inverted U-bolts (Photographs 17, 19, 20, and 21).

Lateral bracing of the top chord of the truss were rods of "X" configuration in each panel (Photograph 16). Angles of the same configuration were used at the bottom chord between floorbeams (Photograph 19).

Sway bracing at each vertical post consisted of top and bottom struts between trusses connected by tension rods (Photograph 7). The struts were made up of angles with a latticed web. The portal bracing at each end post was of similar construction (Photograph 5).

Erector's plaques with dates appear at both ends of the bridge (Photograph 29). The front of the plaque gives the name of the Lycoming County Commissioners in office at that time. The back of the plaque (Photograph 30) reads "1889 Groton Bridge and Mfg. Co. Builders, Groton, N.Y."

According to previous reports all original material was wrought iron.

Since its original erection in 1889 the bridge has undergone several changes, the most notable being the conversion to a 2-span bridge in 1925. A pronounced sag in the bridge, probably due to heavier live loads using the structure, prompted the construction of a concrete pier at midspan (Photograph 24). Temporary supports at L7 and L9 held the bridge while the pier was constructed under L8 (Photographs 9, 10, and 36). The original 7/8" hanger rods, L8-M8, were replaced with a built-up steel compression member L8-U8. The original compressive subtruts, L8-M8 and M8-L9, were replaced with L7-U8 and L9-U8 tensile plates. Top and bottom chords remained as they were. New and heavier sway bracing was installed at U8. The effect of this construction was a structure of two simple span trusses with a common vertical post, L8-U8. In 1976 a horizontal strut, M7-M9, was erected to provide greater stiffness to the vertical posts at L7 and L9 (Photograph 10). This, in elevation, is as the bridge appears today (Photographs 1 and 2).

Since 1925 various repairs have been made to maintain the use of the bridge. These included replacing the wooden travel deck with 2-1/2" open steel grid (Photograph 13), the strengthening of deteriorated floorbeams with welded cover plates, flame shortening of diagonals, reinforcing hanger rods and diagonals (Photographs 11 and 15), and jacketing abutments with concrete.

The truss has expansion bearings at the east abutment (Photograph 22) and fixed bearings at the west abutment (Photograph 23). The stone masonry abutments, now jacketed with concrete, appear in Photographs 25 (east abutment) and 26 (west abutment).

The sidewalk, carried by the upstream (north) truss, is 4.2' wide with 1" steel grating (Photograph 27). The latticed sidewalk grilling does not appear on the 1908 postcard (Photograph 31), but is visible in a 1932 news photo (Photograph 32). Photographs 20 and 21 show typical sidewalk brackets and hangers, without and with pin connections, respectively.

B. Construction History of the Original Structure

Bridge firms like Groton typically operated on a bid and contract system. Normally the county engineer wrote the specifications for a new bridge, and invitations for bids were announced in local newspapers. The bridge company salesman inspected the site, decided on the most appropriate designs, and submitted a number of bids. When a bid was accepted, a contract was signed and the company shop prefabricated and mass-produced the parts (Simmons 1978).

In the Groton shops,

bridges were fabricated from standard metal forms and then dismantled for shipment to the construction sites, where they were reassembled by a crew supervised by a foreman from the firm. (Thurber Fall 1983)

Often the builder would hire and train local people for the crew (Simmons 1978).

Although no specific information on the construction of the Memorial Avenue Bridge is available, these methods were most likely used. Since Williamsport had five railroads running through town, as well as two stations (Larson 1984), presumably the rail transportation facilitated shipment of the parts to the site.

C. Description of Site

The existing bridge is located at its original site. The structure is positioned on an alignment perpendicular to Lycoming Creek between center city Williamsport on the east and the suburban satellite of Newberry on the west. Travel on the bridge is east-west; Lycoming Creek flows southward to its confluence with the West Branch Susquehanna River.

The crossing is constrained by a levee-floodwall system on both approaches, as part of the Williamsport Flood Protection System. The levee along the west bank of Lycoming Creek extends from the river to about a mile above Memorial Avenue. The levee on the east bank extends from the river to approximately 200 feet downstream of Memorial Avenue. A reinforced concrete floodwall continues upstream to High Street approximately 900 feet.

Maximum underclearance from the stream bed is 18.7' to the floor beams, and 20.4' to the stringers. Lycoming Creek is in the eastern span of the existing bridge with the pier at the west edge of water under normal flow conditions. Hand-placed rip-rap has been installed along the east bank and along the west bank and levee.

When the flood protection system was completed, closures were placed at both ends of the bridge, since the approach roadways are below the levee and floodwall. High water for the June 1972 flood was 1.5' above the deck (Pennsylvania Department of Transportation 1983 Hydrologic and Hydraulic Study).

III. SOURCES OF INFORMATION

A. Engineering Drawings

The original drawings for the 1889 construction year are not available. However, the following drawings, in chronological order, are retained on microfilm in the Engineering District 3-0 Bridge Unit, Montoursville, PA:

1. M.C. Krause, "Proposed Wood Block Floor," November 1918. (Photograph 35)
2. M.C. Krause, "Detail of Proposed Jacket Wall, East Abutment," August 1922.
3. M.C. Krause, "Plans Showing Sizes and Stresses," December 1924.
4. M.C. Krause, "Details of New Support Pier and Proposed Repairs to Present Trusses," March 1925, first sheet. (Photograph 36)
"New Pin Connection-Plate Reinforcement," undated, second sheet.
5. American Bridge Company, "Repairs for Erie Avenue Bridge," June 1925.
6. W.P.A. Project 11188, "South Elevation, Bridge Over Lycoming Creek, Memorial Avenue, Williamsport, PA," April 1937, 2 sheets (second sheet undated).
7. Blaw - Knox Company, "Irving Bridge Decking for Memorial Avenue Bridge," March 1939.
8. M.C. Krause, "Detail of Proposed Jacket Wall, West Abutment," July 1946.
9. M.C. Krause, "Construction of Roller Nest Boxes and Placing Them on Memorial Avenue Bridge," March 1956.
10. Pennsylvania Department of Transportation, "Truss Repairs," September 16, 1971. (Photograph 37).
11. Pennsylvania Department of Transportation, "Installation of New Bearing Plates and Pedestals at Abutments," May 8, 1972. (Photograph 38)
12. Pennsylvania Department of Transportation, "Bridge Repairs (Horizontal Truss Support and Floor Beam Repairs)," September 1976.
13. Pennsylvania Department of Highways, "In-Depth Bridge Inspection, Williamsport, Lycoming County, Memorial Avenue Bridge," undated, 2 sheets. (Photographs 39 and 40)

In addition, the following two engineering drawings were included in the Preliminary Case Report (FHWA 1984):

"Existing Bridge, Two Span Continuous Through Truss" (Photograph 41)

"Existing Bridge, Typical Cross Section" (Photograph 42)

Photograph numbers of drawings included in this recordation are indicated in parentheses after each reference.

B. Historic Views

Four historic views of the Memorial Avenue Bridge were uncovered:

1. Postcard titled "Newberry Bridge, Lycoming Creek, Williamsport, PA.," postmarked October 4, 1908. In the Postcard Collection of the Division of Archives and Manuscripts, Pennsylvania Historical and Museum Commission, Harrisburg, PA. Manuscript Group 213, County File, Box 24, Lycoming County.

Also in the private collection of Frank Y. Stahl, Milton, PA.

Shows bridge before center pier was installed, looking north, with Newberry to left.

2. Photograph, untitled, of Memorial Avenue Bridge, published July 31, 1932 in Grit (Williamsport, PA). Photo shows end view of bridge with wood block floor being repaired.
3. Photograph titled "Memorial Avenue Bridge, 1934." In the Pennsylvania History Collection of the James V. Brown Library of Williamsport and Lycoming County, PA. Photograph Number 10450, B508.
4. Photograph of Memorial Avenue Bridge, published July 16, 1939 in Grit (Williamsport, PA). Caption notes that the structure was "opened to traffic last evening after having been closed for several weeks undergoing repairs." A new floor and sidewalk were installed, making the bridge "of all-steel construction." Photo shows side view of bridge. Note the absence of the center horizontal strut, M7-M9.

These views are included as part of this recordation as Photographs 31, 32, 33, and 34.

Two relatively recent views of the bridge were also found, but they were not included in this recordation because they do not add to our knowledge of the history of the structure. They were both published in the Grit (Williamsport, PA) on the following dates:

December 3, 1961. Shows oblique view of Memorial Avenue bridge with nearby creek crossings. (Published in conjunction with proposed High Street Bridge.)

April 29, 1962. Shows structure without accompanying article. Caption notes that the bridge "links the central part of the city with the northwestern sector."

C. Interviews

Interviews that yielded information about the Memorial Avenue Bridge were conducted with representatives of 1) The Pennsylvania Department of Transportation, 2) The Pennsylvania Historical and Museum Commission, 3) The Lycoming County Historical Society, 4) The New York Department of Transportation, 5) historians and collectors, 6) Williamsport - Lycoming Chamber of Commerce, and 7) the James V. Brown Library.

The following information and documents were provided by each source:

1. Pennsylvania Department of Transportation

- a. Preliminary Case Report, Memorial Avenue Bridge Replacement Project, August 1984
- b. Environmental Assessment, Memorial Avenue Bridge Replacement Project, September 1984.
- c. Technical Memorandums, Memorial Avenue Bridge Replacement Project, September 1984
- d. Determination of Eligibility Report, Memorial Avenue Bridge Replacement Project (1984).
- e. Pennsylvania Historic Resource Survey Form, Memorial Avenue Bridge
- f. In Depth Inspection Report, 1969
- g. In Depth Inspection Report, 1976
- h. In Depth Inspection Report, 1981
- i. Feasibility Study, January 1983
- j. Preliminary Hydrologic and Hydraulic Study, 1984
- k. Bridge Replacement Studies, 1984

2. Pennsylvania Historical and Museum Commission, Harrisburg, PA. Dan Deibler, Bureau of Historic Preservation, Personal Interview, December 1983.

Information on historic significance of existing bridge.

3. New York Department of Transportation, Albany, New York. William Chamberlin, Phone Interviews, December 19, 1983 and January 9, 1984.

Information on significance of Memorial Avenue Bridge and other Groton bridges in New York State.

4. Pamela Thurber, historian of the Groton Bridge and Manufacturing Company, National Trust for Historic Preservation, Washington, D.C. Personal Communications, December 19, 1983; January 5 and January 9, 1984.

"The Groton Iron Bridge Company," Historic Ithaca and
Thompkins County, New York, Fall 1983, pp. I-IV.

"A Study of the Groton Iron Bridge Company and the
Preservation of America's Historic Metal Truss Bridges,"
Master's Thesis, June 1985.

5. Frank Y. Stahl, Local Collector, Milton, PA, Phone Conversation, February 27, 1986.

Private Postcard Collection, Postcard titled "Newberry
Bridge, Lycoming Creek, Williamsport, PA."

6. Williamsport - Lycoming Chamber of Commerce, Williamsport, PA. Ms. Ruthe M. Frye, Administrative Assistant, Economic Development, Phone Conversation, June 10, 1986.

Richards, Louis, and William D. Crocker, A Digest of the
Laws and Ordinances for the Government of the Municipal
Corporation of the City of Williamsport, Pennsylvania, In
Force August 1, 1900.

7. James V. Brown Library, Williamsport, PA. Rhonda Fisher, Librarian.

1934 Photograph of Memorial Avenue Bridge
Williamsport City Directories
City Atlases

8. Grit (Williamsport, PA). Naomi Woolever, Letter, June 25, 1986.

Information on Newberry extension of street car system at
Blaine St., south of Memorial Ave.

Historic photographs of Memorial Avenue Bridge.

D. Bibliography

1. Primary and Unpublished Sources

- a. Gannett Fleming Corrdry & Carpenter, Inc. "Report of In-Depth Inspection, L.R. 20 BR Spur Sta. 4+04, Truss Bridge Over Lycoming Creek, Memorial Avenue, Williamsport, Lycoming County, PA," May 1969.
- b. Harrisburg, PA. Division of Archives and Manuscripts, Pennsylvania Historical and Museum Commission. Manuscript Group 213, Postcard Collection, County File, Lycoming County, Box 24, Williamsport. Contains postcard titled "Newberry Bridge, Lycoming Creek, Williamsport, PA.," showing Memorial Avenue Bridge, looking north. Card is postmarked October 4, 1908, 17 years before the center pier was built.

Record Group 20, "General Services"; and Manuscript Group 218, "General Photograph Collection," were also checked, but contained no materials on the Memorial Avenue Bridge.

- c. Pennsylvania Department of Transportation. "In Depth Inspection Report, Memorial Avenue Through Truss, Legislative Route 20 Spur Bridge, Station 4+04 over Lycoming Creek, Williamsport, Lycoming County, Pennsylvania," September 1976.
- d. _____. "In Depth Inspection Report, Memorial Avenue Thru Truss, L.R. 20 Spur Bridge, Station 4+04 Over Lycoming Creek, City of Williamsport, Lycoming County, Pennsylvania," 1981.
- e. Pennsylvania Department of Highways. "Preliminary Bridge Record," March 30, 1962. In files of District 3-0 Bridge Unit, Pennsylvania Department of Transportation, Montoursville, PA.
- f. Thurber, Pamela. "A Study of the Groton Iron Bridge Company and the Preservation of America's Historic Metal Truss Bridges." Thesis presented to the Faculty of the Graduate School of Cornell University in Partial Fulfillment of the Requirements for the Degree of Master of Arts, June 1985.
- g. Williamsport, PA. Lycoming County Courthouse, Prothonotary's Office. Road Docket 5, 1854-1858. April Sessions, 1855, p. 177. August 22, 1855, pp. 253-154.
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F. Likely Sources Not Yet Investigated

Further research in the Williamsport Daily Gazette, the Sun and Banner, and Grit may reveal information on construction or repairs to the bridge. However, all references to the Erie/Memorial Avenue crossing in the newspaper indices of the James V. Brown Library, Williamsport, were checked.

G. Supplemental Material

None

H. Data Pages Preparer

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IV. PROJECT INFORMATION

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LOCATION MAP

SCALE: 1" = 1,000'

